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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/714,292	11/17/2000	Takatoshi Yamanaka	1080.1084 (JDH)	-4924

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STAAS & HALSEY LLP  
SUITE 700  
1201 NEW YORK AVENUE, N.W.  
WASHINGTON, DC 20005

EXAMINER

MILLER, RYAN J

ART UNIT	PAPER NUMBER
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2621

DATE MAILED: 07/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/714,292

Applicant(s)

YAMANAKA ET AL.

Examiner

Ryan J. Miller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 17-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2004 and 22 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. The response received on April 22, 2004 has been placed in the file and was considered by the examiner. An action on the merits follows.

***Election/Restrictions***

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:
- I. Claims 1-16, drawn to an image processing system for processing a medical image based on an image processing condition, the type of photography device, and the imaging target, classified in class 382, subclass 132.
  - II. Claims 17-19, drawn to an image processing system that uses a condition table to enhance an image, classified in class 382, subclass 254.
3. The inventions are distinct, each from the other because of the following reasons:
4. Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because Claim 2, which is one of the broadest combination claim, does not require the use of an image processing condition table and does not require that the image processing is for the purpose of image enhancement as required by claim 17, which is one of the broadest subcombination claims. The subcombination has separate utility such as image enhancement. The combination claim does not require that the image processing is image enhancement.

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5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

6. Therefore, newly submitted claims 17-19 are directed to an invention that is independent or distinct from the invention originally claimed.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 17-19 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

#### ***Response to Arguments***

7. Applicant's arguments filed April 22, 2004 have been fully considered. A response to these arguments is provided below.

#### **Drawing Objections**

*Summary of Argument:* The applicant argues that the drawings and specification have been amended to overcome the objection to the claims. The applicant also argues that "b2" of Fig. 9 is mentioned in the specification at page 35, line 12 (see applicant's remarks: page 10, subheading "Drawing Objections").

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*Examiner's Response:* The examiner finds these arguments persuasive. The objection to the drawings has been withdrawn.

#### Specification Objections

*Summary of Argument:* The applicant argues that the specification has been amended to overcome the objections and that a copy of the convolution algorithm has been submitted (see applicant's remarks: page 10, subheading "Specification Objections").

*Examiner's Response:* The examiner disagrees. The examiner cannot find an explanation of the relevance of tables 1-3 anywhere in the specification. This objection will be represented below.

#### 35 U.S.C. 112, Second Paragraph Rejections

*Summary of Argument:* The applicant argues that the claims have been amended to overcome the rejection.

*Examiner's Response:* The examiner disagrees. The specific points of this rejection that still stand will be represented below.

#### Prior Art Rejections

#### **35 U.S.C. 102(e) rejections**

*Summary of Argument:* The applicant argues that the image processing in Ogura et al. (U.S. Patent No. 6,502,984 B2) is performed prior to X-ray irradiation such that an X-ray image is not subject to the image processing in accordance with the image processing condition. The applicant further argues that the reference is silent with regard to "an image processing condition storing section to store an image processing condition associated with a type of the photography device and a part of the target," because in the Ogura et al. apparatus the image processing

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condition is measured (see applicant's remarks: pages 11-12, subheading "Claim Rejection under 35 U.S.C. 102(e)").

*Examiner's Response:* Regarding the argument that the image processing in Ogura et al. is performed prior to X-ray irradiation, the examiner disagrees. The reference describes that the image process means performs various types of image processing on the image information obtained by the radiographic image photographing means (see column 15, lines 49-53). Furthermore, Ogura et al. does disclose "an image processing condition storing section to store an image processing condition associated with a type of the photography device and a part of the target" (see Fig. 29 and column 16, lines 42-46, and column 17, lines 9-14). The reference describes an image process condition determining means for determining and storing the image processing condition for the radiation image based on the irradiation field size (i.e. type of the photography device) and the photography portion of the object (a part of the target).). Since it is unclear, even in light of the specification, what is meant by "type of photography device", the examiner has given the phrase its broadest reasonable interpretation. This broadest reasonable interpretation includes the irradiation field size. Furthermore, the claim language does not exclude the image processing condition from being measured. The claim merely requires the image processing condition to be associated with a type of the photography device and a part of the target. Ogura et al. discloses such a feature as described above.

### **35 U.S.C. 103(a) rejections**

*Summary of Argument:* The applicant argues that the additional reference Ogura (U.S. Patent No. 6,314,198 B1) does not overcome the deficiencies of Ogura et al. because Ogura does not disclose or suggest anything related to the recitation in claim 1 of "an image processing

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condition storing section to store an image processing condition when the radiation image is subjected to the image processing in accordance with a type of photography device and a part of the target when the radiation image is obtained” (see applicant’s remarks: page 12, subheading “Claim Rejection under 35 U.S.C. 103(a)”).

*Examiner’s Response:* The examiner disagrees. Ogura was combined with Ogura et al. to provide a teaching of a luminance correction processing. Ogura et al. disclose, “an image processing storing section” as required by claim 1.

### ***Specification***

8. The disclosure is objected to because of the following informalities: A description of Tables 1-3 in the specification is not provided. Although the specification states that the content of the tables 1 to 3 will be described below on page 20, lines 16-17, no such description was found.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, as well as claims 2, 15, and 16, calls for “a type of photography device”. This element, while mentioned in the disclosure, is not clearly defined. What is a “type of photography device”? Where is it defined in the specification? Is the “type of photography

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device” the type of imager used to capture the radiographic image? Or, is it the type of medical image that is captured? An answer to these questions is required in order to determine the metes and bounds of the claims.

Claims 3-14 are rejected as depending from a rejected claim.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 1-3 and 5-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Ogura et al. (U.S. Patent No. 6,502,984 B2).

As applied to claim 2, which is representative of claims 1 and 14, Ogura et al. discloses an image processing apparatus for subjecting a medical image to an image processing by using a photography device, comprising: an image processing condition storing section for to store an image processing condition when the medical image is subjected to the image processing in accordance with a type of photography device and a part of the target when the medical image is obtained (see Fig. 29 and column 16, lines 42-46, and column 17, lines 9-14: The reference describes an image process condition determining means for determining and storing the image processing condition for the radiation image based on the irradiation field size (i.e. type of photography device) and the photography portion of the object (i.e. part of the target).); a data obtaining section obtain the medical image, and the type of the photography device and the part



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of the target when the medical image is obtained (see Fig. 29: Reference numeral 71 referring to a radiographic image photographing means (i.e. a data obtaining section).); and an image processing section to read the image processing condition the same photography device type and the same part of the target as the type of the photography device and the part of the target obtained by said data obtaining section from said image processing condition storing section, and to subject the medical image obtained by said data obtaining section to the image processing in accordance with the image processing condition read by the image processing section (see Fig. 29 and column 15, lines 49-53: The reference describes an image process means 73 (i.e. an image processing section) which processes the radiation image based on the irradiation field size (i.e. photography device type) and the photography portion of the object (i.e. photography part) input from the image process conditions determining means 75).).

As applied to claim 3, Ogura et al. discloses that the image processing section subjects the medical image obtained by said data obtaining section to at least a gradation conversion processing and a frequency emphasis processing (see column 15, lines 49-54: The reference describes that the image process means 73 subjects the image to processing including gradation correction and frequency emphasis.), and said image processing condition storing section stores a frequency emphasis function indicating a degree of frequency emphasis in which a gradation conversion function and an average density around respective points of the medical image are used as variables in accordance with the type of the photography device and the photography condition (see Fig. 29: As can be see from the figure, the image process 73 means obtains information (i.e. the photography device type and the photography condition) from the image process condition determining means 75).).

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As applied to claim 5, Ogura et al. discloses an image processing condition operating section to add, to change, and to delete said image processing condition in response to an operation (see column 16, lines 42-67: The reference describes that the image process condition determining means can comprise an irradiation field determining means or posture determining means at any given time. Therefore, a device is used to change, add, or delete one of these conditions.).

As applied to claim 6, Ogura et al. discloses an image display section to display the medical image subjected to the image processing by said image processing section (see column 18, line 45: The reference describes that the processed image can be displayed on a television monitor (i.e. image display section).).

As applied to claim 7, which is representative of claim 8, Ogura et al. discloses an interested area designating section to designate an area of interest on the medical image displayed in said image display section in response to an operation, wherein said image display section lowers a luminance of an area, excluding the area of interest designated by said interested area designating section, to display the medical image (see Fig. 32: From this figure it can be seen that a designated area of the medical image B1 has been displayed and that the luminance of an area excluding the area of interest B1 has been lowered as can be seen by area B2.).

As applied to claim 9, which is representative of claim 10, Ogura et al. discloses a part recognizing section to recognize positions of a plurality of parts appearing in the medical image, wherein said image processing section subjects the area of interest, designated by said interested area designating section, to the image processing in accordance with a respective one of the plurality of parts appearing in the area of interest, and being among the plurality of parts having

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positions thereof which are recognized by said part recognizing section (see column 17, lines 9-27: The reference describes that photograph portion determining means (i.e. parts recognizing means) that determines a part based on a comparison with template parts (i.e. a plurality of parts).).

As applied to claim 11, which is representative of claims 12 and 13, Ogura et al. discloses a scanning processing designating section to designate, in response to an operation, a scanning processing to set an area of interest on the medical image displayed in said image display section and to move the area of interest in a predetermined direction, wherein said image display section displays, in accordance with the scanning processing by said scanning processing designating section, the medical image in which the area of interest successively moves, and a luminance of an area, excluding the area of interest, is lowered (see column 16, lines 42-54: The reference describes a movable aperture stop (i.e. a scanning processing designating section) for determining an irradiated region B1 (i.e. designating a scanning processing of setting the area of interest on the medical image displayed in said image display section). This aperture stop can be moved to any region of interest that is desired.).

As applied to claim 15, which merely calls for the method performed by the apparatus of claim 2, since Ogura et al. disclose the apparatus, the method performed by the apparatus is also disclosed.

As applied to claim 16, which merely calls for an image processing program storage medium in which a program for operating a computer system as an image processing apparatus as described in claim 2, Ogura et al. discloses such an image processing program storage medium since all of the image processing in Ogura et al. is performed by computer.

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ogura et al. (U.S. Patent No. 6,502,984 B2) and Ogura (U.S. Patent No. 6,314,198 B1). The arguments as to the relevance of Ogura et al. in the rejection of claims 1-3 above are incorporated herein.

Claim 4 calls for the image processing section to subject the medical image obtained by the data obtaining section to a luminance correction processing using a dynamic range compression function in which the average density around the respective points of the medical image is used as the variable. Although Ogura et al. discloses a variety of image processing techniques such as gradation correction and frequency emphasis, the reference does not disclose the use of luminance correction processing. However, Ogura, in the same field of endeavor of image processing and the same problem solving area of radiation images discloses the use of luminance correction processing (see column 36, lines 20-30: The reference describes a luminance correction processing using a dynamic range compression processing function which uses the average density as a factor.).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Ogura et al. by adding the luminance correction processing as

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taught in Ogura because this type of processing allows the “optimum image processing for the radiographic, digital image without troubling the operator”.

***Conclusion***

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan J. Miller whose telephone number is (703) 306-4142. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Leo H. Boudreau can be reached on (703) 305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ryan J. Miller

Ryan J. Miller  
Examiner  
Art Unit 2621



LEO BOUDREAU  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600